



**U.S. Department of Energy  
Technical Qualification Program**

***Conduct of Assessments  
Topical Area***

**Study Guide**

**Developed by the  
*Savannah River Operations Office***

**March 1997**

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**Topical Competencies**

Competency 4.5.....	CM 1-1
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**Construction management and engineering personnel shall demonstrate a working level knowledge of assessment techniques, reporting, and follow-up actions used to evaluate contractor performance.**

Competency 4.6.....	CM 1-13
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**Construction management and engineering personnel shall demonstrate the ability to assess contractor and/or Federal construction management and engineering activities and make all necessary reports.**

Competency 4.2.....	CP 1-1
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**Chemical processing personnel shall demonstrate a working level knowledge of assessment techniques, reporting, and follow-up actions as they apply to contractor performance.**

Competency 4.3.....	CP 1-14
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**Chemical processing personnel shall demonstrate the ability to assess contractor chemical processing activities and make all necessary reports.**

Competency 4.2.....	CV 1-1
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**Civil/structural engineering personnel shall demonstrate a working level knowledge of assessment techniques, reporting, and follow-up actions as applied to contractor performance.**

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Competency 4.3..... CV 1-13

**Civil/structural engineering personnel shall demonstrate the ability to independently assess contractor and/or Federal employee civil/structural engineering activities and make all necessary reports.**

Competency 4.12..... EC 1-1

**Environmental compliance personnel shall demonstrate a working level knowledge of facility performance assessment, including assessment techniques (such as observations, interviews, and document reviews), reporting results, and following-up on action(s) taken.**

Competency 2.22..... EH 1-1

**EH Residents shall demonstrate a working level knowledge of the Environment, Safety, and Health (ES&H) Appraisal Program as described in Department of Energy (DOE) Order 5482.1B, Environment, Safety, and Health Appraisal Program.**

Competency 4.1..... EH 1-13

**EH Residents shall demonstrate an expert level knowledge of assessment techniques such as the planning and use of observations, interviews, and document reviews to assess facility performance, report results of assessments, and follow up on actions taken as the result of assessments.**

Competency 4.7..... EH 1-29

**EH Residents shall demonstrate the ability to assess independently contractor and/or Federal employee environment, safety and health-related activities in accordance with the requirements of the following Department of Energy (DOE) Orders and Standard:**

- **DOE Order 4330.4B, Maintenance Management Program**
- **DOE Order 5480.17, Site Safety Representative**
- **DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities**
- **DOE Order 5480.31, Start-up and Restart of Nuclear Facilities**
- **DOE-STD-3006-93, Planning and Conduct of Operational Readiness Reviews**

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Competency 4.6..... EM 1-1

**Emergency management personnel shall demonstrate a working level knowledge of assessment techniques such as the planning and use of observations, interviews, and document reviews to assess Department of Energy (DOE) and facility performance, report results of assessments, and follow-up on actions taken as the result of assessments.**

Competency 4.7.....ER 1-1

**Environmental restoration personnel shall demonstrate a working level knowledge of assessment techniques (such as the planning and use of observations, interviews, and document reviews) to assess project performance, report results of assessments, and follow up on actions taken as the result of assessments.**

Competency 4.8..... ES 1-1

**Electrical systems personnel shall demonstrate a working level knowledge of assessment techniques, reporting, and follow-up actions as they apply to contractor performance.**

Competency 4.9..... ES 1-12

**Electrical systems personnel shall demonstrate the ability to assess the activities of contractor and/or Federal electrical systems employees and make all necessary reports.**

Competency 4.1..... FM 1-1

**Facility maintenance management personnel shall demonstrate a working level knowledge of assessment techniques (such as the planning and use of observations, interviews, and document reviews) to assess facility performance, report results of assessments, and follow-up on actions taken as the result of assessments.**

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Competency 4.1..... FP 1-1

**Fire protection personnel shall demonstrate a working level knowledge of assessment techniques such as the planning and use of observations, interviews, and document reviews to assess facility performance, report results of assessments, and follow up on actions taken as the result of assessments.**

Competency 4.2..... FP 1-13

**Fire protection personnel shall demonstrate the ability to conduct assessments, develop corrective actions and recommendations, communicate assessment results, and develop supporting reports.**

Competency 4.2..... FR 1-1

**A Facility Representative shall demonstrate a working knowledge of assessment techniques such as the planning and use of observations, interviews, and document reviews to assess facility performance, report results of assessments, and follow up on actions taken as the result of assessments.**

Competency 4.4..... FR 1-22

**A Facility Representative shall demonstrate a familiarity level knowledge of applicable DOE Orders sufficient to conduct independent assessment of contractor and/or Federal employee work activities.**

Competency 4.3..... IC 1-1

**Instrumentation and control personnel shall demonstrate a working level knowledge of the Department of Energy/facility contract provisions necessary to provide oversight of a contractor's performance.**

Competency 4.5..... IC 1-6

**Instrumentation and control personnel shall demonstrate a working level knowledge of the assessment techniques, reporting, and follow-up actions used to evaluate contractor performance.**

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Competency 4.6.....IC 1-17

**Instrumentation and control personnel shall demonstrate the ability to assess contractor and/or Federal employee instrumentation and control activities and make all necessary reports.**

Competency 4.1..... IH 1-1

**Industrial hygiene personnel shall demonstrate a working level knowledge of assessment techniques such as the planning and use of observations, interviews, and documentation reviews to assess industrial hygiene performance, report results of assessments, and follow up on actions taken as the result of assessments.**

Competency 4.2.....IH 1-13

**Industrial hygiene personnel shall demonstrate the ability to conduct assessments, develop recommendations for corrective actions, communicate assessment results, and develop supporting reports/documentation.**

Competency 4.6..... MS 1-1

**Mechanical systems personnel shall demonstrate a working level knowledge of assessment techniques (such as the planning and use of observations, interviews, and document reviews) to assess facility performance, report results, and follow up on actions takes as the result of assessments.**

Competency 4.7..... MS 1-13

**Mechanical systems personnel shall demonstrate the ability to assess contractor mechanical systems activities independently and make all necessary reports**

Competency 4.6.....NE 1-1

**Nuclear explosives safety personnel shall demonstrate the ability to conduct appraisals to verify effective implementation of the Nuclear Explosive and Weapon Surety (NEWS) Program in accordance with the following Department of Energy (DOE) directives:**

- **DOE Order 5610.10 Nuclear Explosive and Weapon Surety Program**
- **DOE-STD-BBB-95, Nuclear Explosive Surety Program Appraisals (when issued)**

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Competency 2.8..... NS 1-1

**Nuclear safety system personnel shall demonstrate a familiarity level knowledge of Department of Energy (DOE) Order 5482.1B, Environment, Safety, and Health Appraisal Program.**

Competency 4.1..... NS 1-18

**Nuclear safety systems personnel shall demonstrate a working level knowledge of assessment techniques (such as the planning and use of observations, interviews, and document reviews) to assess facility performance, report results of assessments, and follow up on actions taken as the result of assessments.**

Competency 4.3..... OS 1-1

**Occupational safety personnel shall demonstrate a working level knowledge of assessment techniques applicable to occupational safety, reporting results, and following up on actions taken as the result of assessments.**

Competency 4.1..... QA 1-1

**Quality assurance personnel shall demonstrate a working level knowledge of assessment techniques.**

Competency 4.1..... RP 1-1

**Radiation protection personnel shall demonstrate a working level knowledge of assessment (compliance and performance) principles and techniques necessary to identify facility and program deficiencies, event precursors, potential systemic causes, corrective actions, and best practices.**

Competency 4.2..... RP 1-12

**Radiation protection personnel shall demonstrate the ability to evaluate the adequacy of radiation protection programs against the requirements of regulations, Department of Energy (DOE) Orders and rules pertaining to radiation protection.**

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Competency 4.9..... SS 1-1

**Safeguards and security personnel shall demonstrate a working level knowledge of assessment techniques (such as planning and use of observations, interviews, and document reviews) to assess facility performance, report results of assessments, and follow-up on actions taken as the result of assessments.**

Competency 5.1..... TM 1-1

**A senior technical safety manager shall demonstrate the ability to conduct assessments, develop recommendations for corrective actions, communicate assessment results, and develop supporting reports/documentation.**

Competency 4.2..... TT 1-1

**Technical training personnel shall demonstrate a working level knowledge of basic assessment principles associated with evaluating DOE contractors including the planning and use of observations, interviews, personnel interfaces, and document reviews to assess compliance with established criteria or requirements.**

Competency 4.5.....WM 1-1

**Waste management personnel shall demonstrate a working level knowledge of the Department of Energy/facility contract provisions necessary to provide oversight of a contractor's operations as described in Department of Energy (DOE) Order 4700.1, Project Management System, and Department of Energy (DOE) Technical Standard, DOE-STD-1073-93, Guide for Operational Configuration Management.**

Competency 4.7.....WM 1-10

**Waste management personnel shall demonstrate a working level knowledge of assessment techniques, reporting, and follow-up actions as they apply to contractor performance.**

Competency 4.8.....WM 1-21

**Waste management personnel shall demonstrate the ability to independently assess contractor and/or Federal employee waste management activities and make all necessary reports.**

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<b>Appendix A</b>	<b>Glossary .....</b>	<b>A-1</b>
<b>Appendix B</b>	<b>Training-to-Competency Matrix.....</b>	<b>B-1</b>



**U.S. Department of Energy  
Technical Qualification Program**

***Conduct of Assessments  
Topical Area***

**Study Guide**

**Introduction**

**March 1997**

### **1. Scope**

This study guide encompasses the following competencies related to conduct of assessments:

- Chemical Processing 4.2 and 4.3
- Civil/Structural Engineer 4.2 and 4.3
- Construction Management & Engineering 4.5 and 4.6
- EH Resident 2.22, 4.1, and 4.7
- Electrical Systems 4.8 and 4.9
- Emergency Management 4.6
- Environmental Compliance 4.12
- Environmental Restoration 4.7
- Facility Maintenance Management 4.1
- Facility Representative 4.2 and 4.4
- Fire Protection 4.1 and 4.2
- Industrial Hygiene 4.1 and 4.2
- Instrumentation & Controls 4.3, 4.5, and 4.6
- Mechanical Systems 4.6 and 4.7
- Nuclear Explosive Safety 4.6
- Nuclear Safety Systems 2.8 and 4.1
- Occupational Safety 4.3
- Quality Assurance 4.1
- Radiation Protection 4.1 and 4.2
- Safeguards and Security 4.9
- Senior Technical Safety Manager 5.1
- Technical Training 4.2
- Waste Management 4.5, 4.7, and 4.8

The scope of this study guide is to describe requirements for conducting assessments within the Department of Energy (DOE) nuclear facilities. This study guide provides the participants with the required Competencies, Knowledge and Skills, and Self-Study Information necessary for planning, performing, reporting, and follow-up on assessments. Specific techniques are presented for questioning, evaluating, reporting, and follow-up of assessments. This study guide provides the details necessary to monitor contractors and Federal employees performance to ascertain program status in facilities and determine the effectiveness of implementation of DOE Orders; state and federal regulations; national codes and standards; and other requirements

This study guide has been developed to support personnel in their efforts to become more technically competent and complete the requirements of DOE's

Technical Qualification Program. By providing competencies for which conduct of assessments can be implemented, a uniform process and program can be established for defense nuclear facility technical personnel.

The competencies developed for this study guide identify a familiarity level, a working level, or an expert level of knowledge or skill; or they require the individual to demonstrate the ability to perform a task or activity. These levels are defined as follows:

**Familiarity level** is defined as a basic knowledge of or exposure to the subject or process adequate to discuss the subject or process with individuals of greater knowledge.

**Working level** is defined as the knowledge required to monitor and assess operations/activities, to apply standards of acceptable performance, and to reference appropriate material and/or expert advice as required to ensure the safety of Departmental activities.

**Expert level** is defined as a comprehensive, intensive knowledge of the subject or process sufficient to provide advice in the absence of procedural guidance.

**Demonstrate the ability** is defined as the actual performance of a task or activity in accordance with policy, procedure, guidelines, and/or accepted industry or Department practices.

*Due to the administrative nature of the topic of conduct of assessments, in certain cases there is no upper tier DOE related material available as reference for certain Knowledge and Skills. It is the responsibility of the participating individuals to obtain the version of the referenced material used at their site/program office to assist them in understanding the Knowledge and Skills as required.*

## **2. Purpose**

The purpose of this study guide is to assist personnel in preparing to demonstrate their competency in the area of conducting consistent assessments within the Department of Energy (DOE) complex. This study guide provides the fundamentals for consistent techniques and processes, and allows the participants to focus on performance and effectiveness rather than simple compliance with requirements.

### **3. References**

- a. Code of Federal Regulations Title 10, Energy, Part 830 Nuclear Safety Management (10 CFR 830)
- b. DOE Order 4330.4B, Maintenance Management Program (phased out, replaced by DOE Order O 430.1 Life Cycle Asset Management)
- c. DOE Order 5480.1B, Environmental, Safety and Health Programs for DOE Operations
- d. DOE Order 5480.17, Site Safety Representatives
- e. DOE Order 5480.19, Conduct of Operations Requirements for DOE Facilities
- f. DOE Order 5480.20A, Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities (replaces DOE Order 5480.20, Personnel Selection, Qualification, Training, and Staffing Requirements at Department of Energy Reactor and Non-reactor Nuclear Facilities)
- g. DOE Order 5480.21, Unreviewed Safety Questions
- h. DOE Order 5480.22, Technical Safety Requirements
- i. DOE Order 5480.23, Nuclear Safety Analysis Reports
- j. DOE Order 5482.1B, Environment, Safety, and Health Appraisal Program (canceled by DOE N 251.21)
- k. DOE Order 5610.10, Nuclear Explosive and Weapon Surety Program
- l. DOE Order 5610.11, Nuclear Explosive Safety
- m. DOE Order 5700.6C, Quality Assurance (change 001)
- n. DOE N 5480.10, Radiological Control
- o. DOE O 210.1, Performance Indicators and Analysis of Operations Information (formerly 5480.26) (change 002)
- p. DOE O 232.1, Occurrence Reporting and Processing of Operation

Information (formerly DOE Order 5000.3B, Occurrence Reporting)

- q. DOE O 425.1, Startup and Restart of Nuclear Facilities (formerly DOE Order 5480.31, Start-Up and Restart of Nuclear Facilities)
- r. DOE O 430.1, Life Cycle Asset Management (formerly DOE Order 4700.1, Project Management System) (change 001)
- s. DOE G 414.1-1, Implementation Guide for Use with Independent and Management Assessment Requirements of 10 CFR Part 830.120 and DOE 5700.6C Quality Assurance
- t. DOE G 830 120, Implementation Guide for use with 10 CFR Part 830.120
- u. DOE-HDBK-1085-95, DOE Enforcement Roles and Responsibilities
- v. DOE-HDBK-1089-95, Guidance for Identifying, Reporting, and Tracking Nuclear Safety Noncompliances
- w. DOE-HDBK-3012-94, Team Leader's Preparation Guide For Operational Review
- x. DOE-STD-1055-93, Guidelines for Maintenance Management Involvement at DOE Nuclear Facilities
- y. DOE-STD-1063-93, Establishing and Maintaining a Facility Representative Program at DOE Nuclear Facilities
- z. DOE-STD-1070-94, Guidelines for Evaluation of Nuclear Facility Training Programs
- aa. DOE-STD-1073-93-Pt. 1, Guide for Operational Configuration Management Program
- bb. DOE-STD-3006-93, Planning and Conduct of Operational Readiness Reviews
- cc. DOE-EM-STD-5505-96, Operations Assessments
- dd. DOE-STD-BBB-95, Nuclear Explosive Surety Program Appraisals (when issued)

- ee. Performance Based Assessments External, Internal, and Self-Assessment Tools for Total Quality Management, by Paul F. Wilson and Richard D. Pearson, ASQC Quality Press, Milwaukee, Wisconsin, 1995, ISBN 0-87389-242-9.
- ff. Project Management, A Systems Approach to Planning, Scheduling, and Controlling, Third Edition, by Harold Kerzner, Ph.D., Van Nostrand Reinhold, New York, 1989, ISBN 0-442-20751-4.

### **4. How to Use This Guide**

- a. Read this guide for those competencies you wish to satisfy through self-study. Review the associated Knowledge and Skills, Self-Study Information, the items identified in the Reference section, and complete the Practice Exercises.
- b. Work through the Practice Exercises provided in the document. When complete, check your answers against the answers provided in section 6 of the competency.
- c. Refer to the Glossary (Appendix A), as needed, which contains definitions and terminology.
- d. Review the Self-Study Information in this guide, or in the referenced training material. For assistance or additional information, contact your supervisor or subject matter expert at your facility or site, or refer to identified resources in the Training-to-Competencies Matrix located in Appendix B.